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Research Article

Epidemiology of Gastrointestinal Cancer Result from Hospital Based Cancer Registry Data

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Abstract

Background: 19.3 million new cases and almost 10 million cancer deaths are estimated, Cancer of gastrointestinal tract represent about one-fifth (30%) of cancer incidence and about one-third (40%) of all cancer related deaths. Approximately 1 million new cases of carcinoma stomach and 769000 deaths. Ranking 5th for incidence and fourth in position for cancer-related death. According to the Indian Cancer Registry Programme in 2020, 1400000 new cases were diagnosed. This article describes the Hospital Based Cancer Registry incidence of various types Cancer in the region under investigation of Gallbladder, Liver , Stomach, Colorectum, pancreas and esophagus which includes Gallbladder cancer, Liver cancer, stomach cancer, Colorectal cancer, Pancreas cancer and esophagus cancer.

Material and Method: Retrospective observational study was conducted in the Department of Radiation Oncology at State Cancer Institute, Patna, (Bihar). We analyzed the cancer records from 2014 to 2022, all the histopathologic ally confirmed cases of GIT cancer including gallbladder cancer and biliary tract disease, esophagus cancer, stomach cancer, liver cancer, pancreas cancer, colorectal cancer were included. We analyzed the data decoding according to disease, Common age group, Male: Female ratio of upper GIT tumor.

Result: Total Gastro Intestinal Tumor cases in our study were 27.4% of all registered cases. Most common cancer of upper GIT in a study was carcinoma gall bladder in which 4204 cases were registered. Most of the cases registered were from Patna. Most common age group was 50-60 years of age. which contributed 1748 cases (41.5%) cases. Most of the cases registered were from Patna district as well as 2nd most cases were registered in Vaishali District, Muzaffarpur was 3rd according to number of cases.

Keywords: HBCR Cancer Gallbladder; Cancer Liver; Cancer Stomach; Cancer Pancreas; Cancer Colorectal; Cancer Esophagus

Introduction

19.3 million new cases and almost 10 million cancer deaths are estimated [1], Recent studies show that more than 50% of Gastrointestinal Cancer are caused by modifiable risk factors like alcohol consumption, tobacco smoking and diet, infection and obesity. Some common risk factors and some distinct etiological factors are associated with Gastrointestinal Cancer. Descriptive epidemiological studies shown [2-7], Approximately 1 million new cases of carcinoma stomach and 769000 deaths. Ranking 5th for incidence and fourth in position for cancer related death. Incidences are twofold higher in males as compared to females [1]. Cancer Liver is the 6th commonest cancer and 3rd leading cause of cancer related death with approximately 906000 new cases and 830000 deaths in 2020 worldwide. Incidence rate and mortality both are 2-3 times higher in males than females in most of the reasons amongst males it ranks fifth in incidence and 2nd most

common causes of cancer death [1]. In India approximately 19% cases of gastro Intestinal malignancies and 3.2% cases were of carcinoma esophagus. Esophageal cancer is the 3rd most common Gastrointestinal malignancy among both sexes in India. It affects predominantly among Males. Male: Female ratio is 1.5:1 [8]. Cancer esophagus with 604000 new cases and 544000 deaths ranked on seventh position in all cancers Eastern Asia showed highest reported incidence rate for both sexes because of the large burden in China, Southern Africa, Eastern Africa. Parts of Europe and South-Central Asia [1]. Gallbladder cancer is an uncommon but highly fatal malignancy in the United States around 5000 new cases diagnosed every year in the United States [9,10], Indian studies reported that there is a significant increasing trend of carcinoma gallbladder in females [11]. Globally the new cases and deaths are estimated by 2040 to increase by 58% and 73% to 7.5 and 5.6 million respectively [12]. In Europe and North America colorectal carcinoma and Pancreas were highest, whereas in Asia gastric, esophagus, liver cancer were more common [13]. In India Cancer esophagus and stomach were more common in males [8]. Incidence of gallbladder carcinoma shows higher trend in north and north east part of India. Global burden of disease in India [14], Study report (1990-2016) reported stomach cancer 9% colorectal (5.8%) esophagus (4.3%) Liver Cancer (3.5%) and gallbladder and biliary tract cancer 3.1% of total cancer DALYs (India state level burden initiative cancer collaboration 2018) [15]. In this article we describe the HBCR Cancer Gallbladder, Cancer Liver, Cancer Stomach, Cancer Colorectal, Cancer Pancreas, Cancer esophagus.

Material and Methods

Retrospective observational study was conducted in the Department of Radiation Oncology at State Cancer Institute, Patna (Bihar). We analyzed the cancer records from 2014 to 2021, all the histopathologically confirmed cases of GIT cancer including cancer gallbladder and biliary tract disease, cancer esophagus, cancer stomach, cancer liver , cancer pancreas, cancer colorectal were included. The objective was to analyze the trend and pattern of upper gastrointestinal tumor registered under HBCR in our Institute. We analyzed the data decoding according to disease, Common age group. Male: Female ratio of upper GIT tumor.

Results

Total cancer registered in our HBCR registry were 32057 from 2014 to 2021. Total Gastro Intestinal Tumor cases in our study were 27.4% of all registered cases and 47.6% of all Gastrointestinal Tumor Cancer. Most common cancer of Gastrointestinal Tumor in our study was Carcinoma Gall Bladder in which 4204 cases were registered which were 13.10% of all the total cases from 2014 to 2021.Male: Female ratio was 0:0.55, most common age group was involved 50-60 years of age. which contributed 1748 cases (41.5%) cases. Second common cancer was cancer liver in which 1572 cases (4.9%) of all cases and 17.8% of all GIT Cancer cases were registered. Male: Female ratio was 2:1 most common age group was 50-60 years. 39% of all liver cancer cases were registered with this group. Third commonest was stomach cancer which constitutes about 1116 (3.4%) and 12.64% of all the GIT Cancer cases. Male: Female ratio was 1.5:1. Most common age group is 50-60 years of age. 39.24% cases were registered within this age group. Fourth commonest cancer was colorectal carcinoma in which 1028 cases were registered which were 3.4% of all the total cases and 11.65% of all GIT Cancer, Male: Female ratio was 1.7:1. Most common age group was involved 35-40 years of age (42.89%) of cases. In cancer esophagus only 455 cases which were 1.41% of all cases and 5.1% of all GIT Cancer were registered from 2014-2021. Most common age group was 60-64 years of age. Male: Female ratio was 1.8:1. Cancer pancreas 448 cases which were 1.39% of all cases and 50% of all GIT Cancer registered; most common age group was 50-60 years of age. Male: Female ratio was 1.3:1.

Most of the cases registered were from Patna district as well as 2nd most cases were registered in Vaishali District, Muzaffarpur was 3rd according to number of cases.

Based on the data, it appears that Gastrointestinal (GIT) cancer is a significant problem in the area served by the State Cancer Institute in Patna, Bihar. Here are some key findings from study:

- Out of the 32,057 cancer cases registered in your registry from 2014 to 2021, 27.4% were GIT cancer cases.
- Carcinoma Gall Bladder was the most common type of GIT cancer, accounting for 13.1% of all cases. The majority of cases were in women, and the most common age group affected was 50-60 years old.
- Cancer liver was the second most common type of GIT cancer, accounting for 4.9% of all cases. Most cases were in men, and the most common age group affected was 50-60 years old.
- Stomach cancer was the third most common type of GIT cancer, accounting for 3.4% of all cases. Male to female ratio was 1.5:1 and the most common age group affected was 50-60 years old.
- Colorectal carcinoma was the fourth most common type of GIT cancer, accounting for 3.4% of all cases. Male to female ratio was 1.7:1 and the most common age group affected was 35-40 years old.

- Cancer esophagus accounted for 1.41% of all cases, and most cases were in men in the age group of 60-64 years.
- Cancer pancreas accounted for 1.39% of all cases, and most cases were in the age group of 50-60 years. Male to female ratio was 1.3:1.
- The majority of cases were from Patna district, followed by Vaishali and Muzaffarpur districts.

Overall, this study provides important insights into the prevalence and distribution of GIT cancers in the area served by the State Cancer Institute , Indira Gandhi Institute of Medical Sciences in Patna, Bihar.

Area wise distribution is shown in the table below.

Cancer Site	n								Total (n)	Median	Male: female
	2014	2015	2016	2017	2018	2019	2020	2021		Age (years)	
Gallbladder	370	506	619	911	711	273	383	431	4204	55	.55:1
Liver	117	150	153	307	228	100	256	261	1572	55	2.1:1
Stomach	99	97	134	185	150	67	196	188	1116	53	1.5:1
Colon-rectum	92	119	157	179	163	60	117	141	1028	49	1.7:1
Pancreas	28	20	59	87	58	28	78	90	448	55	1.3:1
Esophagus	41	71	63	79	85	30	29	45	443	60	1.7:1

Table 1: Gastro Intestinal Cancer registered between January 2014 and December 2021 in descending orders.

Gastro intestinal cancer

Figure 1: Relative proportion (%) of Gastro Intestinal Cancer.

Graph 1: Total number of Gastro Intestinal Tumor year wise data.

In the above table the maximum number of cases of gastrointestinal tumor was found in the year 2017. In 2017 a total of 1758 cases that constituted around 19.90% of the total cases were found.

Type of cancer	No of Patients	Percentage %
Adenocarcinoma	4177	99.3%
Cholangiocarcinoma	23	0.6%

Table 2: Histological distribution of Carcinoma Gall Bladder and percentage.

In the above table most number of cases in Carcinoma Gall Bladder was of adenocarcinoma that was around 99.3% of the total cases of Carcinoma Gall Bladder.

District	No of Cases	Percentage %
Patna	611	14.53%
Vaishali	222	5.28%
Sitamarhi	184	4.38%
Saran	183	4.35%
Samastipur	177	4.21%
Motihari	169	4.02%

Table 3: Carcinoma Gall bladder cases district wise cases and percentage.

Carcinoma gall bladder which is the most common cancer, most of the cases were found in Patna district that constitutes around 14.53% of the total cases.

Type of cancer	No of Patients	Percentage %
Hepatocellular Carcinoma	1266	80.5%
Adenocarcinoma	260	16.5%
Hepatocellular Cholangiocarcinoma	24	1.5%
Hepatoblastoma	7	0.4%
Carcinoma	5	0.3%
Cholangiocarcinoma	5	0.3%
Hepatocellular Carcinoma	2	0.1%
Spindle Cell Carcinoma	2	0.1%
Hepatocellular Carcinoma Scirrhous	1	0.06%

Table 4: Histological distribution of Carcinoma Liver with percentage.

In the above table Histological distribution of Carcinoma Liver is mentioned, Hepatocellular Carcinoma constitutes the maximum number of cases 1266 and is 80.5% of Carcinoma Liver cases, Second is Adenocarcinoma which is 16.5% of Carcinoma Liver cases.

District	No of Cases	Percentage %
Patna	164	10.43%
Samastipur	112	7.12%
Saran	84	5.34%
Vaishali	81	5.15%
Muzaffarpur	70	4.45%
Begusarai	67	4.26%
Motihari	66	4.20%

Table 5: District wise Carcinoma Liver and percentage.

In the above table in Carcinoma Liver which is the second most common kind of cancer, In carcinoma liver most cases were found in the Patna district around 10.43% of the cases and second most cases were found in Samastipur district of Bihar.

Type of cancer	No of Patients	Percentage %
Adenocarcinoma	1071	95.9%
Squamous Cell Carcinoma	25	2.2%
Gastrointestinal Stromal Tumor	8	0.7%
Carcinoma	4	0.3%
Signet Cell Carcinoma	4	0.3%
Signet Ring Cell Adenocarcinoma	2	0.1%
Carcinosarcoma	1	0.08%
Mucin Producing Adenocarcinoma	1	0.08%

Table 6: Histological distribution of Stomach Cancer and with percentage.

In the histological distribution of the Stomach Cancer the most number of cases is of Adenocarcinoma which is 1071 and it is 95.9% of Carcinoma Stomach cases, Second is Squamous Cell Carcinoma which constitutes of 2.2% of the Carcinoma Stomach cases.

District	No of cases	Percentage %
Patna	170	15.23
Vaishali	67	6.00
Nalanda	60	5.38
Samastipur	57	5.11
Muzaffarpur	56	5.02
Saran	50	4.48

Table 7: Number of cases of Cancer Stomach district wise and its percentage.

In the above table in Cancer Stomach is the third most common kind of cancer, In carcinoma stomach most number of cases were found in the Patna district around 15.23% of the cases and second most cases were found in Vaishali district that was around 6%.

District	No of Cases	Percentage %
Patna	180	17.51
Vaishali	60	5.84
Samastipur	52	5.06
Saran	48	4.67
Muzaffarpur	47	4.57
Nalanda	45	4.38

Table 8: Distribution of Cancer Colorectal district wise and its percentage.

In the above table in Cancer Colon-Rectum is the fourth most common kind of cancer, In carcinoma Colon-Rectum most number of cases were found in the Patna district around 17.51% of the cases and second most cases were found in Vaishali district that was around 5.84%.

Type of cancer	No of Patients	Percentage %
Adenocarcinoma	1012	98.4%
Mucinous Adinocarcinoma	4	0.3%
Papillary Adenocarcinoma	2	0.1%
Signet Cell Carcioma	6	0.5%
Squamous Cell Carcinoma	4	0.3%

Table 9: Histopathological distribution of Cancer Colorectal and its percentage.

In the histopathological distribution of Cancer Colorectal, Adenocarcinoma constitutes of maximum number of cases which is 1012 that is 98.4% of the total cases found in Cancer Colorectal, Second most case is of Signet Cell Carcinoma which is 0.5% of the total number of Cancer Colorectal cases.

District	No of cases	Percentage %
Patna	65	14.51
Vaishali	31	6.92
Muzaffarpur	28	6.25
Sitamarhi	22	4.91
Samastipur	16	3.57
Saran	15	3.35
Nalanda	11	2.46

Table 10: Total number of Carcinoma Pancreas cases district wise and its percentage.

In the above table in Carcinoma Pancreas is the fifth most common kind of cancer, In carcinoma Pancreas most number of cases were found in the Patna district around 14.51% of the cases and second most cases were found in Vaishali district that was around 6.92%.

Type of cancer	No of Patients	Percentage %
Adenocarcinoma	429	95.76
Carcinoma	13	2.90
Mucinous adenocarcinoma	4	0.89
Neuroendocrine Carcinoma	2	0.45

Table 11: Histopathology of carcinoma pancreas cases.

In the histopathology of Carcinoma Pancreas Adenocarcinoma constitutes of maximum number of cases 429 which is 95.76% of the total number of the Carcinoma Pancreas cases, Second is Carcinoma which is 2.90% of the total number of the cases of Carcinoma Pancreas.

Type of cancer	No of Patients	Percentage %
Squamous cell carcinoma	229	51.69%
Adenocarcinoma	199	44.92%
Carcinoma	2	0.45%
Metaplastic Carcinoma	1	0.22%
Signet Cell Adenocarcinoma	1	0.22%
Small Cell Carcinoma	1	0.22%

Table 12: Histological distribution of Carcinoma Esophagus with percentage.

In the histological distribution of Carcinoma Esophagus maximum number of cases is of Squamous Cell Carcinoma in which a total 229 patients were diagnosed which was 51.69% of the total number of the Carcinoma Esophagus cases, Second is Adenocarcinoma in which total 199 patients were diagnosed which was 44.92% of the total number of cases of Carcinoma Esophagus.

District	No of cases	Percentage %
Patna	65	14.67
Vaishali	31	7.00
Muzaffarpur	28	6.32
Sitamarhi	22	4.97
Motihari	18	4.06
Begusarai	18	4.06
Bhojpur	18	4.06

Table 13: District wise distribution of Carcinoma Esophagus with percentage.

In the above table in Carcinoma Esophagus is the sixth most common kind of cancer, In carcinoma esophagus most number of cases were found in the Patna district around 14.67% of the cases and second most cases were found in Vaishali district that was around 7%.

Type of Cancer	Most Common Age Group
Cancer gallbladder	45-60 yrs
Cancer Liver	50-65 yrs
Cancer Stomach	50-60 yrs
Cancer Colorectal	35-45 yrs
Cancer Pancreas	35-64 yrs
Cancer Esophagus	60-64 yrs

Table 14: Table of common age group.

The most common age group which was diagnosed with Cancer Gall Bladder is of 45- 60 years of age , In Cancer Liver the most common age group was 50-65 years of age , In Cancer Stomach the most common age group diagnosed was 50-60 years , In the case of Colorectal Cancer the most common age group which was diagnosed was 35-45 years of age, In the case of Cancer Pancreas the most common age group was 35- 64 years of the age, lastly in Cancer Esophagus the most common age group diagnosed with maximum number of cases was of 60-64 years of age group.

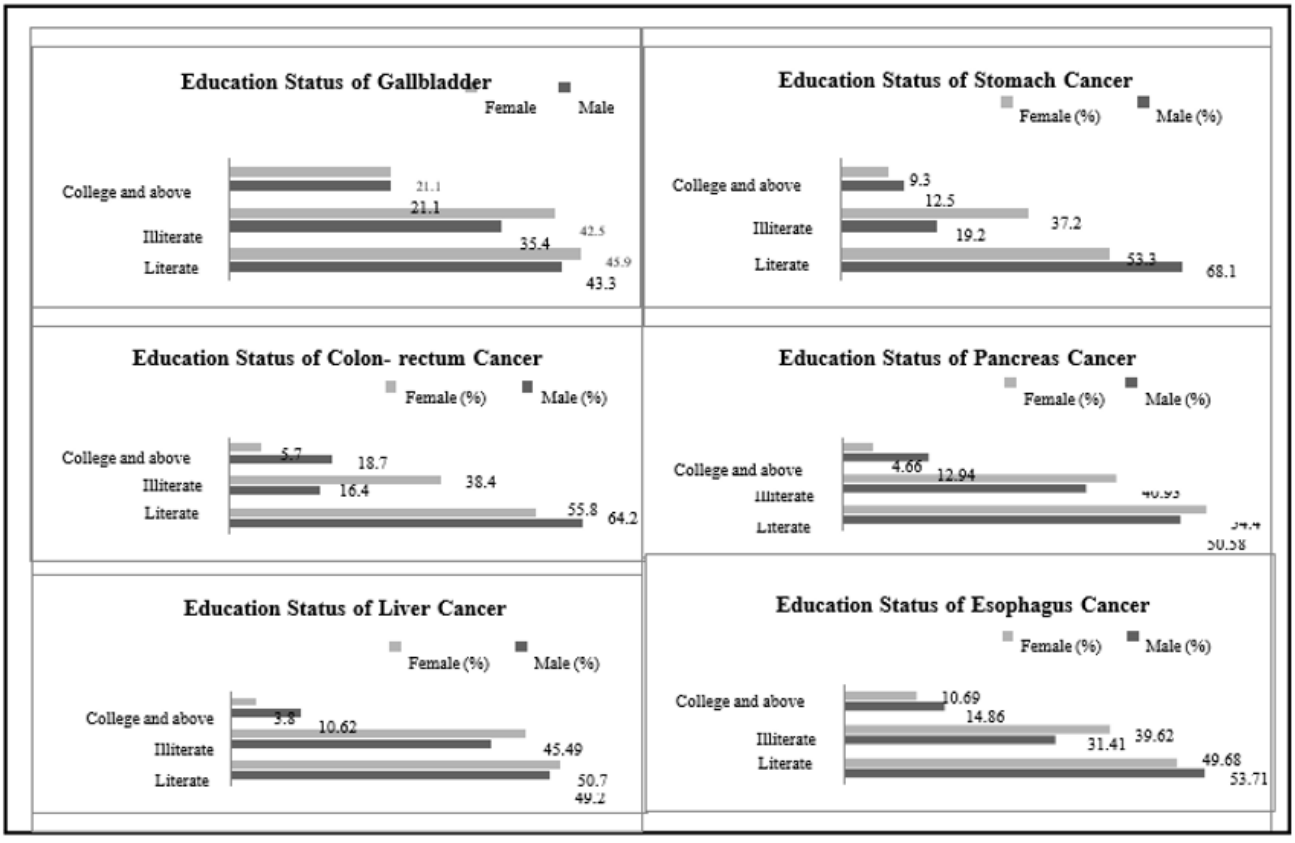
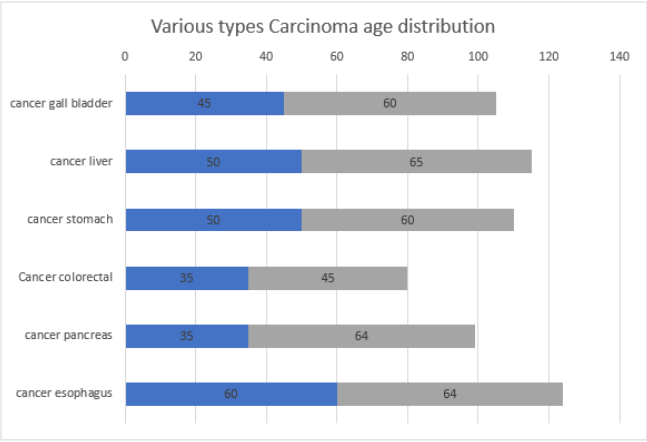


Figure 2: Relative proportion (%) of educational Status Gastro Intestinal Cancer.



Graph 2: Distribution of various types carcinoma classifies according to age group.

Discussion

The cancer of the digestive tract contributes to about 30% of cancer incidence and 40% of all cancer-related death globally [13]. The study suggests that digestive tract carcinoma contributes to a significant proportion of cancer incidence and related deaths globally. The most common age group affected is 60-64 years, and males are more likely to be diagnosed than females. In particular, gallbladder cancer is the most prevalent in the study, affecting females more than males, with the highest incidence in the 50-60 age group. Gastric adenocarcinoma, neuroendocrine carcinoma, and gastric signet ring carcinoma are common histopathologies found in the study. The ratio of prevalence of digestive tract carcinoma in males and females was 0.55 with Patna, Vaishali, Bhagalpur, Saran, Samastipur, Nalanda, and Motihari being the most affected districts. In our study, 34.28% of patients were illiterate, 52.3% were up to matric. The proportion of gallbladder cancer was higher in females (3.7%) than Males (2.2%) in comparison to all other GIT sites among the registry programme 2022 [16]. Gallbladder cancer was reported higher in 45-49 years of age group in female, according to national registry programme 2021, A higher proportion of gallbladder and liver cancer had distant metastasis at the time of representation adenocarcinoma was the major histological type in all the gastrointestinal cancer sites. In our study also gall bladder carcinoma was twofold more in females as compared to males. There is wide variation in Incidence of carcinoma gall bladder worldwide and in India. Worldwide it is the most common malignancy of biliary tract [17]. Highest incidence of gallbladder cancer found in Eastern Asia which has Age Adjusted Rates (AAR) 3.3 per lakh population while 2.9 per lakh population in South America, and 2.4 per lakh population in North America. Global age adjusted rate of gallbladder cancer incidence is approximately 2.9 per lakh population. Contribution of Eastern Asia is 45% of total gallbladder cancer globally [17]. In India the population-based registry showed the North India (Especially gangatic belt) and eastern India showed a high incidence rate in comparison to other parts of the country. South India has shown low incidence of carcinoma gall bladder highest rate shown in Assam, Kamrup district where incidence in females was 17.1 per lakh population and 8.8 per lakh population in males [19]. In our study females were two times more registered than Males. A close association of gallbladder, dietary factors, female sex, obesity, genetic, environmental factors, chronic inflammation, female reproductive factors described by other studies [20-22]. Common histopathology we found in our study gastric adenocarcinoma, Neuro endocrine carcinoma, gastric signet ring carcinoma, signet ring cell carcinoma. In the course of river Ganga, the pollutant bacterial contamination is steadily rising which may be responsible up to some extent for causing gallbladder cancer. Industrial waste , agricultural wastes ,untreated sewage added into water along the course of Ganges [23] may cause bacterial infections like salmonella typhi, *Heliobacter Pylori* have been shown association with gallbladder cancer [24-28] Mustard oil which is the main cooking medium of North , Eastern India has irritant property on gut and sometimes adulterated with some oil (butter yellow) which has carcinogen properties [25]. Heavy metals , nitrates ,high level of pesticides which have carcinogenic properties have been identified in Ganges [30]. On its bank a very densely populated human civilization especially poor socio economic population which resides near bank of river for its daily water needs. Stomach cancer was the 3rd commonest gastro intestinal tumor in our study, males were more registered than females. 26% were illiterate and 62.3% patients were up to matric. Common age group was 60-64 years in males, 50-54 years in females. Literacy rate was 73.5%. In Nepal. Study showed stomach cancer composed of 7.3% of all cancers among males and 4.4% among females [40]. In our study 4.1% cases amongst males and 2.7% among females reported stomach cancer. Incidence of stomach cancer in Aizwal district

(Age Standard Ratio 44.2) among males is fourth highest after China, Japan and Republic of Korea (Age Standard Ratio 134.2) [41]. Globally the incidence of stomach cancer has decreased due to improved socio demographic Index [42] and in esophageal cancer age standardized rates, mortality and DALY's from 1990 to 2017 have decreased [43]. There is an increasing trend shown in our study from 2014 to 2017, after 2017 there is slight decline in new cases registry till now. Common histology found in a study was Adenocarcinoma (95.9%). 2nd Common malignancy in our study was carcinoma liver. Worldwide with an estimation 50,000 to 1 million new cases reported per year [31]. Incidence reported highest in USA 150 cases per one lakh population from parts of Africa and Asia while lowest incidence reported 4 cases per 1,00,000 population in the USA. A large proportion of cancer deaths occurs in these regions due to Hepatocellular Carcinoma [32]. Prognosis is very poor. About 77% of deaths due to Hepatocellular carcinoma occur in developing countries [33]. In India the four-population based registry shows the mean incidence of Hepatocellular carcinoma is 2.77% for Males and 1.38% for Females. Hepatocellular Carcinoma prevalence ranges from 0.2 to 1.6% [34,35]. Common age group involved in our study was 50-60 years which is comparable to other studies [36-38]. Male: Female ratio was 2.1:1 which is similar to population-based data which showed Male: Female ratio 3:1- 2:1:1 [39]. Common histopathology found in a study were hepatocellular carcinoma 80.5% and 16.5% Adenocarcinoma. Colorectal carcinoma which was 10th common cancer in our HBCR registry and 4th in our Gastrointestinal Cancer Registry. Worldwide colorectal carcinoma is the most common gastrointestinal cancer. India is contributing 6.86% of global colorectal carcinoma burden [1]. In India contributing 35,385 (4.15%) deaths of total cancer deaths more than 90% of colorectal cancer are found adenocarcinoma. Known risk factors for colorectal cancer are Alcohol consumption [44] high intake of Red and processed meat [45,46]. Lack of physical activity [4], obesity [47]. Established protective factors are diet rich in fiber, diet including wholegrain, dairy products [4].

Common histopathology we found in our registry was adenocarcinoma in 98.4% cases rest of mucinous adenocarcinoma (0.3%) papillary adenocarcinoma (0.1%), signet ring carcinoma (0.5%) and squamous cell carcinoma (0.3%). The districts which have the highest incidence of colorectal cancer are Patna, Bhojpur, Vaishali and Samastipur. Maybe melanoma, squamous cell carcinoma, carcinoids. Lymphoma, Sarcoma [2,48] incidence of colorectal carcinoma is approximately 1.2 per one lakh population and about 6,00,000 deaths [49] median age of diagnosis is the 7th decade, Incidence rate increases between age group from 40-50 years and thereafter incidence increases in each subsequent decade [50]. Literacy rate shows about 41.85% patients were illiterate, only 49.68% patients were up to matric. Illiteracy causes the patients presented in advanced stage, don't know about the vaccination against Hepatitis B, Hepatitis C, having infections for many years, presented with low general conditions, comorbidities, complications like Jaundice, low body weight, Ignorance about health, lack of awareness about medical facilities, low socioeconomic status. Common histopathology we found in our study were hepatocellular carcinoma (98%), few cases of hepatoblastoma, infantile choriocarcinoma (2%). The district of Bihar which were more affected Patna, Muzaffarpur, Samastipur and Vaishali. Cancer Pancreas is the most common cause of cancer death and 7th most common cause of cancer death and 12th commonest carcinoma. In 2018 Pancreatic Cancer cases deaths 4,32,000 were the same as the number of cases (4,59,000). Risk factors of Pancreatic cancer are not well known. Smoking, diabetes, obesity, consumption of red meat, excessive alcohol intake are some known risk factors [5]. Tobacco smoking causes high mortality [51,52]. Male gender age more than 50 years have increased risk to develop carcinoma pancreas [53]. Poor prognosis and aggressiveness attached with adenocarcinoma [54]. In USA, European countries, Japan and China Pancreatic cancer mortality versus incidence ratio was 98% [55]. 5 year survival rates was 6% varies between developing and developed countries [56,57]. In India pancreatic cancer ranked 21st in males and 17th in females. Mizoram has the highest Age Adjusted Ratio amongst males followed by Mumbai, Thiruvanandpuram and Delhi. Mumbai shown highest rates among females followed by Delhi, Bangalore and Thiruvanandpuram [58]. Various HBCR s in India, Mumbai recorded the highest number of cases followed by Thiruvanandpuram and Chandigarh [59]. Median age group found in our study was 55 years and male: female ratio was 1.3:1 district which were reported a greater number of cases were Patna, Vaishali and Muzaffarpur. Cancer esophagus is increasing significantly worldwide. It is the 4th commonest cause of cancer deaths. Countries with higher Human Development Index (HDI) reported high incidence of adenocarcinoma esophagus [60] in comparison to lower human development index countries

like India reported high incidence of squamous cell carcinoma. Approximately 47000 new cases and 42000 deaths reported each year in India [61]. Squamous Cell carcinoma is the most common type of esophageal cancer and it commonly involves distal part of esophagus [62]. Incidence ratio of Carcinoma esophagus is 20-30 times higher in China than United States. An esophageal carcinoma with squamous cell carcinoma extends from north east China to the Middle East [63-65]. The study has shown an association between diet and environment with esophageal cancer in various parts of the world [66]. In carcinoma esophagus the most common histopathology registered were squamous cell carcinoma 51.69%. 2nd common adenocarcinoma which was 44.52%. Esophageal squamous cell carcinoma and adenocarcinoma have different pathogenesis, different etiological factors and different treatment options and different survival. Incidence of esophageal cancer can be decreased by changing lifestyle consuming nutritional diet (Epidemiological trend of esophageal cancer in Mumbai past 15 years) [23]. Esophageal cancer has a high fatality rate of 90% and decimal prognosis [23].

Peak age group amongst males was 65-69 years and amongst females 50-54 years. Literacy rates were very poor; only 60% of patients were illiterate. Delhi and Mumbai had rising trends of gastrointestinal cancer (colon, rectum, liver, gallbladder and pancreas). Females are more affected with gallbladder cancer as shown by previous population-based studies [67,68]. Pancreatic cancer showed a rising trend among females in Mumbai [69]. In a study there were increasing trends of all gastrointestinal tumors except covid 19 pandemic. The rising trend in gastrointestinal cancer could be due to use of tobacco, alcohol and dietary habits with low consumption of fruits, fiber, high intake of oil and spicy foods may be contributing factors for increasing incidences. In most of the part of India spicy food, dried and salted fish, smoked dried salted meat and intake of high temperature foods are significant risk factors for carcinoma stomach [70]. Mustard oil consumption also a known risk factor for gallbladder cancer [71]. Low intake of fruits and vegetable, smoking and smokeless tobacco and consumption of alcohol , one known risk factor carcinoma stomach and esophageal cancer [72,73].

Conclusion

In conclusion, gallbladder cancer is the most common cancer in the registry, with females being more affected than males, and the gangatic belt being the most affected region. The use of contaminated water, smoking, alcohol and low consumption of fruits and vegetables may be the causative factors for these cancers. Patna showed the highest cancer patients because of referral from other parts of the state in the capital. The lack of targeting for gastro intestinal cancer in various cancer preventive, screening, and awareness programs is a concern. Screening and early detection of the disease can reduce mortality rates. The analysis shows that most patients are illiterate and lack the courage to come forward for detection and treatment due to ignorance about facilities for treatment. Poor socioeconomic status and illiteracy are barriers to getting early treatment. Poor socioeconomic status and illiteracy are the barriers to get the treatment at an early stage. Patients often present with advanced stages, leading to complications like jaundice, vomiting, low general condition, and high mortality. Awareness about healthy food intake, high intake of fiber, fruits and vegetables, low consumption of tobacco and alcohol, and exercise can prevent these cancers and decrease the incidence of gastrointestinal carcinomas.

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